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"In summing up this subject, it may be affirmed that when the striation and transfer of materials have obviously been from N. E. to S. W., in the direction of the Arctic current, and more especially when marine remains occur in the drift, we may infer that floating ice and marine currents have been the efficient agents. Where the striation has a local character, depending upon existing mountains and valleys, we may infer the action of land ice. For many minor effects of striation, and of heaping up of moraine-like ridges, we may refer to the presence of lake or coast ice as the land was rising or subsiding."

Again, "Sea glaciation is always accompanied with much smoothing and polishing, and on very hard rocks the striation is comparatively imperfect, while it is not quite uniform in direction and often presents two sets of striae. The action of true land glaciers, especially when moving down considerable slopes, produces deep grooves, as well as striae, on vertical as well as on horizontal surfaces, and is more fixed and uniform."

The summary of fossils given in Chapter VI, comprises 240 species, of which 33 are plants; the rest are distributed as follows: Protozoa, 21; Echinodermata, 7; Mollusca, 142; Vermes and Arthropoda, 30; Vertebrata, 7. From both flora and fauna the author infers an amelioration of the climate, resulting, in his estimation, from the gradual elevation of the land which threw the Arctic currents from its surface, exposed a larger area to the direct action of solar heat, and probably determined the flow of marine currents so that the heavy northern ice was led out into the Atlantic instead of being drifted southwest over the lower levels of the continent.

The leading thoughts in this collection of papers is the relative value of land ice and water-borne ice as causes of geological change during the Plistocene period. These two agents, together with the complex elevations and depressions of the continent as shown by the deposits and their fossil contents account for the effects observed.

This paper is an important one, and will probably correct the extravagancies into which the past glacialists have fallen.

The Mollusc-Fauna of the Galapagos Islands.[2]—The molluscan forms collected by Professor Leslie A. Lee and his assistants, on the voyage of the U. S. Fish Commission Steamer Albatross, from

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[2] Scientific Results of Explorations by the U. S. Fish Commission Steamer Albatross. No. XXV. Report on the Mollusk-fauna of the Galapagos Islands, with Descriptions of New Species. By Robert E. C. Stearns, Ph. D. Adjunct Curator of the Department of Mollusks. Proc. U. S. Nat. Mus., Vol. XVI, (1893) pp. 353-450, with plate and map.

Chesapeake Bay by the way of the Strait of Magellan to San Francisco in 1887–88, is the basis of this paper which is, as will be seen in the foot-note, a report on the Galapagos material belonging to this division of the animal kingdom. As the author states in the text, it "refers, so far as the marine molluscs are concerned, with a few exceptions, to the littoral and shallow-water species only." The deep sea material remains to be investigated and reported on hereafter, though a few species described by Dall are included in the list, in the later part of the report.

The geographical and physical characteristics of the islands, their climatology and floral aspect, the distances and depths of the water between them, their origin, and the views of Darwin, Hooker, Wallace, Agassiz, Baur, etc., hereon are briefly presented. The origin of the fauna and the flora is discussed, and in this connection the distribution of terrestrial and marine forms, etc., by oceanic currents, drift lodgement, freshets, and the agency of rivers, and the aerial distribution of animal and plant life, as well as the generative capacity and vitality of land snails, their ability to exist a long time without food, of which numerous instances are given, and the tenacity of life in many species that have been observed, are all referred to and treated at considerable length.

The author favors the *volcanic theory* of the region of these islands as held by the majority of scientific writers, rather than that of Dr. Baur and Milne-Edwards, who regard the Galapagos as "*Continental Islands originated through subsidence*," a conclusion based principally on biological evidence, etc.. as exhibited in their peculiar fauna and flora.

The number of molluscan species and varieties obtained by the Albatross collectors was 120, of, these 7 species and 9 varieties were terrestrial forms. Four new species are described, and one of these is a land shell, *Bulimulus* (*Pleuropyrgus*) *habelii*; the others are *Onchidium lesliei, Nitidella incerta,* and *Tectarius galapagoensis.*

As a part of the report, the late Dr. Philip Carpenter's list of the Galapagos species contained in Reeve's Monograph's is given, also Albers' list of Galapagos *Bulimi;* the Petrel-Cookson shells, as determined by E. A. Smith of the British Museum; Wimmer's list of Habel's collection; Ancey's species, and Reibisch's list of species collected by Dr. Theodor Wolf, State Geologist of Ecuador; Dr. W. H. Jones' Chatham Island shells, Dall's recently described Galapagos species, including a few deep water forms, a part of the Albatross dredgings, and a few land species collected by Dr. Baur.

Following the above the author has added a systematic list, summarized from the preceeding authorities. This compilation, which will be found very convenient by the student, shows a total of 318 species and varieties; of these 48 species and varieties are terrestrial and the others marine. Of the latter, 61 are Lambellibranchs and 1 Scaphopod; 205 species and 13 varieties are Gastropods.

Of the marine species the author says, "Less than a half score are indigenous, of these, some, if not all, may prove, upon a better knowledge of the molluscs of the shores of Central and South America, to belong to the mainland." A comparison is suggested of *Omphalius cooksonii* Smith, with the Antillean *O. fasciatus.* The nnmber of species that exhibit intimate relationship with Antillean-Carribean forms is quite small and in conspicuous when placed side by side with the American types; the latter include nearly all the species contained in the summarized list.

The author observes that the land shells are of a distinctly West South American aspect, and a comparison is suggested with several species named, which occur in Bolivia, Peru and Chili, rather than to the peculiar forms inhabiting Ecuador and other South and Central American States further north.

In several instances the erroneous determination of marine species or varieties of the same, that have been made by various authors resulting in the accrediting of Indo-Pacific forms to the Galapagos Islands, have been pointed out and explained. The report closes with a plate containing figures of the species described, and the map of the Galapagos islands.—CHAS. T. SIMPSON.

An Examination of Weismannism.[3]—The several chapters comprised in this volume have been written at successive intervals during the last six or eight years, as Professor Weismann's works have appeared, so that this discussion by Mr. Romanes presents a clear view of the growth of the Weismannian theories. Three chapters are devoted respectively to Weismann's system up to the year 1886—to the year 1892—to the year 1893. Of the two remaining chapters, one is a discussion of Weismann's theory of heredity (1891), the other is a critical examination of Weismann's theory of evolution (1891). Two appendices entitled "On Germ Plasm and On Telegony" complete the volume.

In conclusion, the author refers to the fundamental changes which Professor Weismann has wrought in his general system of theories by

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[3] An Examination of Weismannism. By George John Romanes, M. A., LL. D., F. R. S. Chicago, 1893. Open Court Publishing Co.